

SITE INSPECTION WORKSHEETS

CERCLIS IDENTIFICATION NUMBER

NJD982530073

SITE LOCATION

SITE NAME: LEGAL, COMMON, OR DESCRIPTIVE NAME OF SITE

VANGUARD VINYL SIDING, INC.

STREET ADDRESS, ROUTE, OR SPECIFIC LOCATION IDENTIFIER

CHARLES AND WATER STREETS

CITY

GLOUCESTER CITY

STATE

N.J.

ZIP CODE

08030

TELEPHONE

()

COORDINATES: LATITUDE and LONGITUDE

39° 53' 26" 75° 07' 45"

TOWNSHIP, RANGE, AND SECTION

OWNER/OPERATOR IDENTIFICATION

OWNER GLOUCESTER CITY RETAINS
RESALE RIGHTS

OPERATOR

ABANDONED

OWNER ADDRESS

512 MONMOUTH STREET

OPERATOR ADDRESS

CITY

GLOUCESTER CITY

CITY

STATE

N.J.

ZIP CODE

08030

TELEPHONE

(609) 456-3970

STATE

ZIP CODE

TELEPHONE

()

SITE EVALUATION

AGENCY/ORGANIZATION

NJDEP, DPFCR, CA

INVESTIGATOR

DAVID E. TRIGGS

CONTACT

KEN KLOO

ADDRESS

300 HORIZON CENTER

CITY

ROBINSON

STATE

N.J.

ZIP CODE

08625

TELEPHONE

(609) 581-4200



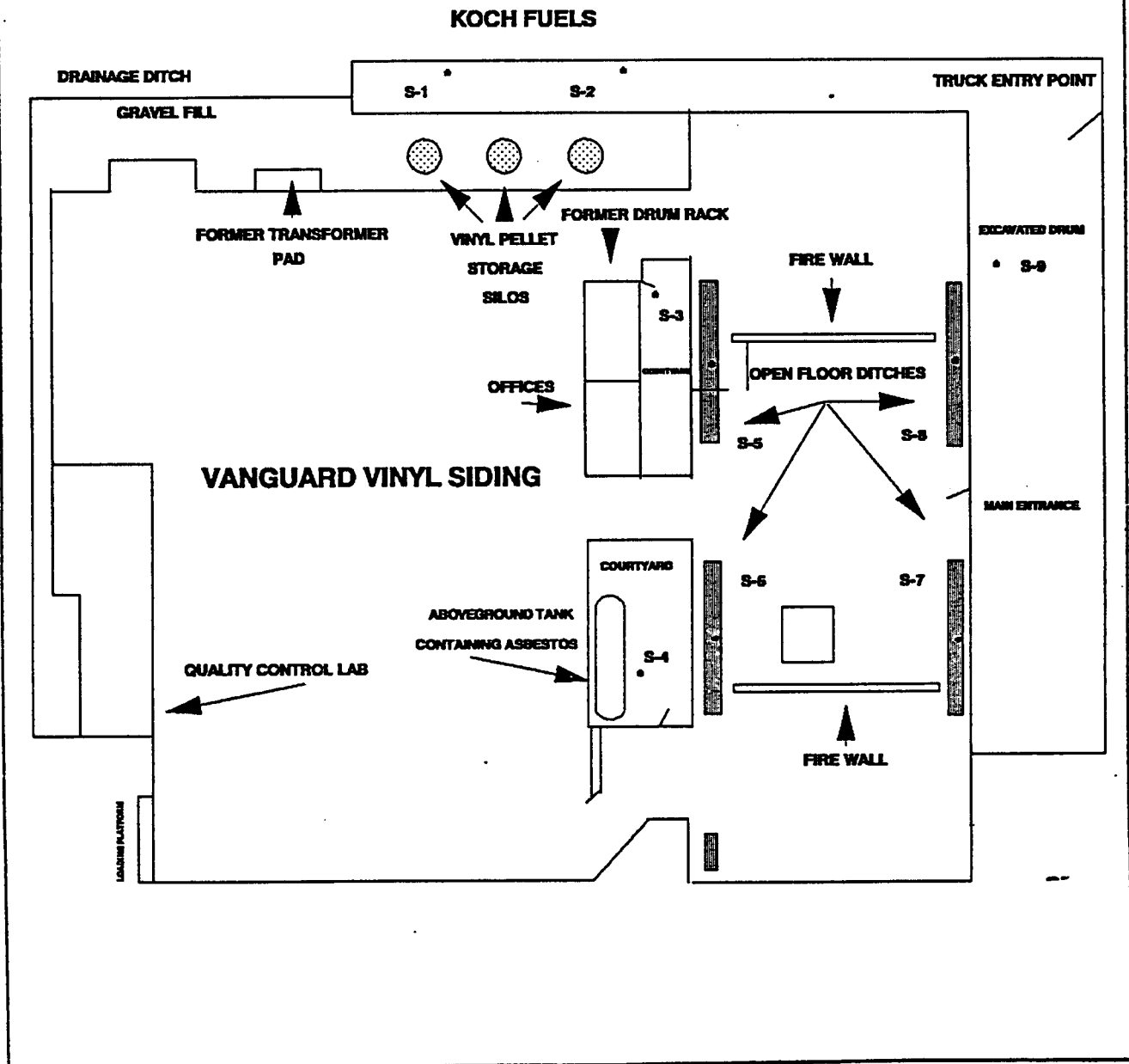
GENERAL INFORMATION

Site Description and Operational History: Provide a brief description of the site and its operational history. State the site name, owner, operator, type of facility and operations, size of property, active or inactive status, and years of waste generation. Summarize waste treatment, storage, or disposal activities that have or may have occurred at the site; note whether these activities are documented or alleged. Identify all source types and prior spills, floods, or fires. Summarize highlights of the PA and other investigations. Cite references.

SANBORN FIRE INSURANCE MAPS INDICATE THAT A HOTEL AND COTTAGE WERE SITUATED ON AND AROUND THE PROPERTY FROM THE LATE 1890S THROUGH THE EARLY 1900S. PRIOR TO WORLD WAR II THE SITE WAS OCCUPIED BY THE RILEY AND JONES SHIPYARD AND A PAPER PRODUCTION FACILITY OWNED AND OPERATED BY LANE MILLS. THE PRECISE NATURE OF SITE OPERATIONS DATING BACK TO THE EARLY PART OF THE CENTURY WHILE FUNCTIONING AS A SHIPYARD AND PAPER MILL ARE UNKNOWN. THE MANUFACTURING OF PRODUCTS CONTAINING ASBESTOS, SUCH AS PIPING AND SHINGLES, DATES FROM THE EARLY 1950S THROUGH THE 1960S WHILE UNDER THE OWNERSHIP OF THE RUBBEROID COMPANY. VINYL SIDING PRODUCED BY VANGUARD VINYL SIDING INVOLVED THE USE OF POLY VINYL CHLORIDE RESINS, STABILIZERS AND PIGMENTS. AREAS OF CONCERN IDENTIFIED BY PAST INSPECTIONS INCLUDE A TRUCK LOADING AND UNLOADING AREA, RUNOFF FROM AN INDOOR AND OUTDOOR DRUM STORAGE YARD, INDOOR FLOOR TRENCHES AND 10,000 gal ABOVE GROUND STORAGE TANK CONTAINING ASBESTOS. ALL CONTAINERIZED HAZARDOUS WASTE ON SITE WAS REMOVED BY THE USEPA AS PART OF A REMEDIAL ACTION COMPLETED ON JULY 2, 1993.

GENERAL INFORMATION (continued)

Site Sketch: Provide a sketch of the site. Indicate all pertinent features of the site and nearby environments including sources of wastes, areas of visible and buried wastes, buildings, residences, access roads, parking areas, fences, fields, drainage patterns, water bodies, vegetation, wells, sensitive environments, and other features.



GENERAL INFORMATION (continued)

Source Descriptions: Describe all sources at the site. Identify source type and relate to waste disposal operations. Provide source dimensions and the best available waste quantity information. Describe the condition of sources and all containment structures. Cite references.

SOURCE TYPES

Landfill: A man-made (by excavation or construction) or natural hole in the ground into which wastes have come to be disposed by backfilling, or by contemporaneous soil deposition with waste disposal.

Surface Impoundment: A natural topographic depression, man-made excavation, or diked area, primarily formed from earthen materials (lined or unlined) and designed to hold an accumulation of liquid wastes, wastes containing free liquids, or sludges not backfilled or otherwise covered; depression may be wet with exposed liquid or dry if deposited liquid has evaporated, volatilized or leached; structures that may be described as lagoon, pond, aeration pit, settling pond, tailings pond, sludge pit; also a surface impoundment that has been covered with soil after the final deposition of waste materials (i.e., buried or backfilled).

Drum: A portable container designed to hold a standard 55-gallon volume of wastes.

Tank and Non-Drum Container: Any device, other than a drum, designed to contain an accumulation of waste that provides structural support and is constructed primarily of fabricated materials (such as wood, concrete, steel, or plastic); any portable or mobile device in which waste is stored or otherwise handled.

Contaminated Soil: An area or volume of soil onto which hazardous substances have been spilled, spread, disposed, or deposited.

Pile: Any non-containerized accumulation above the ground surface of solid, non-flowing wastes; includes open dumps. Some types of waste piles are:

- **Chemical Waste Pile:** A pile consisting primarily of discarded chemical products, by-products, radioactive wastes, or used or unused feedstocks.
- **Scrap Metal or Junk Pile:** A pile consisting primarily of scrap metal or discarded durable goods (such as appliances, automobiles, auto parts, batteries, etc.) composed of materials containing hazardous substances.
- **Tailings Pile:** A pile consisting primarily of any combination of overburden from a mining operation and tailings from a mineral mining, beneficiation, or processing operation.
- **Trash Pile:** A pile consisting primarily of paper, garbage, or discarded non-durable goods containing hazardous substances.

Land Treatment: Landfarming or other method of waste management in which liquid wastes or sludges are spread over land and tilled, or liquids are injected at shallow depths into soils.

Other: Sources not in categories listed above.

GENERAL INFORMATION (continued)

Source Description: Include description of containment per pathway for ground water (see HRS Table 3-2), surface water (see HRS Table 4-2), and air (see HRS Tables 6-3 and 6-9).

ALL CONTAINERIZED HAZARDOUS WASTE ON SITE WAS REMOVED
 AS PART OF A REMEDIAL ACTION CONDUCTED BY THE USEPA
 SITE PATHWAYS WHICH PERSIST TO DATE ARE CONTAMINATED
 SOIL IN THE VICINITY OF THE FOLLOWING AREAS OF
 CONCERN

1. INDOOR AND OUTDOOR DRUM STORAGE RACKS
2. INDOOR TRENCHES
3. AREA SURROUNDING 10,000 GA / ACST
4. AREA SURROUNDING EXCAVATED DRUM

Hazardous Waste Quantity (HWQ) Calculation: SI Tables 1 and 2 (See HRS Tables 2-5, 2-6, and 5-2).

CONTAMINATED SOIL - $0.5 \text{ ACRES} \div 0.78 =$

AREA / MULTIPLE SOURCE 0.64

ROUND 1

Attach additional pages, if necessary

HWQ = 10

SI TABLE 1: HAZARDOUS WASTE QUANTITY (HWQ) SCORES FOR SINGLE SOURCE SITES AND FORMULAS FOR MULTIPLE SOURCE SITES

		Single Source Sites (assigned HWQ scores)	
(Column 1) TIER	(Column 2) Source Type	(Column 3) HWQ = 10	(Column 4) HWQ = 100
A Hazardous Constituent Quantity	N/A	HWQ = 1 if Hazardous Constituent Quantity data are complete HWQ = 10 if Hazardous Constituent Quantity data are not complete	>100 to 10,000 lbs
B Hazardous Wastestream Quantity	N/A	≤ 500,000 lbs	>500,000 to 50 million lbs
C Volume	Landfill	≤ 6.75 million ft ³ ≤ 250,000 yd ³	>6.75 million to 675 million ft ³ >250,000 to 25 million yd ³
	Surface impoundment	≤ 6,750 ft ³ ≤ 250 yd ³	>6,750 to 675,000 ft ³ >250 to 25,000 yd ³
	Drums	≤ 1,000 drums	>1,000 to 100,000 drums
	Tanks and non-drum containers	≤ 50,000 gallons	>50,000 to 5 million gallons
	Contaminated soil	≤ 6.75 million ft ³ ≤ 250,000 yd ³	>6.75 million to 675 million ft ³ >250,000 to 25 million yd ³
	Pile	≤ 6,750 ft ³ ≤ 250 yd ³	>6,750 to 675,000 ft ³ >250 to 25,000 yd ³
	Other	≤ 6,750 ft ³ ≤ 250 yd ³	>6,750 to 675,000 ft ³ >250 to 25,000 yd ³
D Area	Landfill	≤ 340,000 ft ² ≤ 7.8 acres	>340,000 to 34 million ft ² >7.8 to 780 acres
	Surface impoundment	≤ 1,300 ft ² ≤ 0.029 acres	>1,300 to 130,000 ft ² >0.029 to 2.9 acres
	Contaminated soil	≤ 3.4 million ft ² ≤ 78 acres	> 3.4 million to 340 million ft ² > 78 to 7,800 acres
	Pile	≤ 1,300 ft ² ≤ 0.029 acres	>1,300 to 130,000 ft ² >0.029 to 2.9 acres
	Land treatment	≤ 27,000 ft ² ≤ 0.62 acres	>27,000 to 2.7 million ft ² >0.62 to 62 acres

TABLE 1 (CONTINUED)

Single Source Sites (assigned HWQ scores)		Multiple Source Sites	(Column 2) Source Type	(Column 1) TIER
(Column 5) HWQ = 10,000	(Column 6) HWQ = 1,000,000	(Column 7) Divisors for Assigning Source WQ Values		
>10,000 to 1 million lbs	> 1 million lbs	lbs + 1	N/A	A Hazardous Constituent Quantity
>50 million to 5 billion lbs	> 5 billion lbs	lbs + 5,000	N/A	B Hazardous Wastestream Quantity
>675 million to 67.5 billion ft ³ >25 million to 2.5 billion yd ³ >675,000 to 67.5 million ft ³ >25,000 to 2.5 million yd ³ >100,000 to 10 million drums >5 million to 500 million gallons	> 67.5 billion ft ³ > 2.5 billion yd ³ > 67.5 million ft ³ > 2.5 million yd ³ > 10 million drums > 500 million gallons	ft ³ + 67,500 yd ³ + 2,500 ft ³ + 67.5 yd ³ + 2.5 drums + 10 gallons + 500	Landfill Surface Impoundment Drums Tanks and non-drum containers Contaminated Soil Pile Other	C Volume
>34 million to 3.4 billion ft ² >780 to 78,000 acres >130,000 to 13 million ft ² >2.9 to 290 acres > 340 million to 34 billion ft ² > 7,800 to 780,000 acres > 130,000 to 13 million ft ² > 2.9 to 290 acres >2.7 million to 270 million ft ² >62 to 6,200 acres	> 3.4 billion ft ² >78,000 acres > 13 million ft ² > 290 acres > 34 billion ft ² > 780,000 acres > 13 million ft ² > 290 acres > 270 million ft ² > 6,200 acres	ft ² + 3,400 acres + 0.078 ft ² + 13 acres + 0.00029 ft ² + 34,000 acres + 0.78 ft ² + 13 acres + 0.00029 ft ² + 270 acres + 0.0052	Landfill Surface Impoundment Contaminated Soil Pile Land Treatment	D Area

HAZARDOUS WASTE QUANTITY (HWQ) CALCULATION

For each migration pathway, evaluate HWQ associated with sources that are available (i.e., incompletely contained) to migrate to that pathway. (Note: If *Actual Contamination Targets* exist for ground water, surface water, or air migration pathways, assign the calculated HWQ score or 100, whichever is greater, as the HWQ score for that pathway.) For each source, evaluate HWQ for one or more of the four tiers (SI Table 1; HRS Table 2-5) for which data exist: constituent quantity, wastestream quantity, source volume, and source area. Select the tier that gives the highest value as the source HWQ. Select the source volume HWQ rather than source area HWQ if data for both tiers are available.

Column 1 of SI Table 1 indicates the quantity tier. Column 2 lists source types for the four tiers. Columns 3, 4, 5, and 6 provide ranges of waste amount for sites with only one source, corresponding to HWQ scores at the tops of the columns. Column 7 provides formulas to obtain source waste quantity values at sites with multiple sources.

1. Identify each source type.
2. Examine all waste quantity data available for each source. Record constituent quantity and waste stream mass or volume. Record dimensions of each source.
3. Convert source measurements to appropriate units for each tier to be evaluated.
4. For each source, use the formulas in the last column of SI Table 1 to determine the waste quantity value for each tier that can be evaluated. Use the waste quantity value obtained from the highest tier as the quantity value for the source.
5. Sum the values assigned to each source to determine the total site waste quantity.
6. Assign HWQ score from SI Table 2 (HRS Table 2-6).

Note these exceptions to evaluate soil exposure pathway HWQ (see HRS Table 5-2):

- The divisor for the area (square feet) of a landfill is 34,000.
- The divisor for the area (square feet) of a pile is 34.
- Wet surface impoundments and tanks and non-drum containers are the only sources for which volume measurements are evaluated for the soil exposure pathway.

SI TABLE 2: HWQ SCORES FOR SITES

Site WQ Total	HWQ Score
0	0
1 ^a to 100	1 ^b
> 100 to 10,000	100
> 10,000 to 1 million	10,000
> 1 million	1,000,000

^a If the WQ total is between 0 and 1, round it to 1.

^b If the hazardous constituent quantity data are not complete, assign the score of 10.

SI TABLE 3: WASTE CHARACTERIZATION WORKSHEET

Site Name: VAN-WARD VINYL SIDING

References SE ATTACHMENT U

Sources: CONTAMINATED SOIL

1. INDOOR FLOOR TRENCHES 4. ADJACENT EXCAVATED DRUM 7. _____
2. INDOOR / OUTDOOR DRUM RACKS 5. _____ 8. _____
3. ADJACENT - 10,000 gal / AUST 6. _____ 9. _____

[illegible]

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and

 $1, 2, 3, 4$

Ground Water Observed Release Substances Summary Table

On SI Table 4, list the hazardous substances associated with the site detected in ground water samples for that aquifer. Include only those substances directly observed or with concentrations significantly greater than background levels. Obtain toxicity values from the Superfund Chemical Data Matrix (SCDM). Assign mobility a value of 1 for all observed release substances regardless of the aquifer being evaluated. For each substance, multiply the toxicity by the mobility to obtain the toxicity/mobility factor value; enter the highest toxicity/mobility value for the aquifer in the space provided.

Ground Water Actual Contamination Targets Summary Table

If there is an observed release at a drinking water well, enter each hazardous substance meeting the requirements for an observed release by well and sample ID on SI Table 5 and record the detected concentration. Obtain benchmark, cancer risk, and reference dose concentrations from SCDM. For MCL and MCLG benchmarks, determine the highest percentage of benchmark obtained for any substance. For cancer risk and reference dose, sum the percentages for the substances listed. If benchmark, cancer risk, or reference dose concentrations are not available for a particular substance, enter N/A for the percentage. If the highest benchmark percentage or the percentage sum calculated for cancer risk or reference dose equals or exceeds 100%, evaluate the population using the well as a Level I target. If these percentages are less than 100% or all are N/A, evaluate the population using the well as a Level II target for that aquifer.

SI TABLE 4: GROUND WATER OBSERVED RELEASE SUBSTANCES (BY AQUIFER)

Sample ID	Hazardous Substance	Bckgrd. Conc.	Toxicity/ Mobility	References
Highest Toxicity/Mobility				

SI TABLE 5: GROUND WATER ACTUAL CONTAMINATION TARGETS

Well ID: _____ Level I _____ Level II _____ Population Served _____ References _____

Sample ID	Hazardous Substance	Conc. (µg/L)	Benchmark Conc. (MCL or MCLG)	% of Benchmark	Cancer Risk Conc.	% of Cancer Risk Conc.	RID	% of RID
Highest Percent					Sum of Percents		Sum of Percents	

Well ID: _____ Level I _____ Level II _____ Population Served _____ References _____

Sample ID	Hazardous Substance	Conc. (µg/L)	Benchmark Conc. (MCL or MCLG)	% of Benchmark	Cancer Risk Conc.	% of Cancer Risk Conc.	RID	% of RID
Highest Percent					Sum of Percents		Sum of Percents	

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GROUND WATER PATHWAY GROUND WATER USE DESCRIPTION

Describe Ground Water Use within 4 Miles of the Site:
Describe generalized stratigraphy, aquifers, municipal and private wells

THE FACILITY IS SITUATED NEAR THE WESTERN BOUNDARY OF THE ATLANTIC COASTAL PLAIN PHYSIOGRAPHIC REGION AND IS UNDERLAIN BY UNCONSOLIDATED SEDIMENTS OF QUATERNARY, TERTIARY AND CRETACEOUS AGE CONSISTING OF ALTERNATING LAYERS OF SANDS, SILTS AND CLAYS. THESE SEDIMENTS, ESTIMATED TO BE 250 FEET THICK, THICKEN EASTWARD TOWARDS THE ATLANTIC OCEAN. THE MOST PRODUCTIVE SOURCE OF GROUND WATER IN CAMDEN COUNTY IS THE POTOMAC-BARITAN-MAGGOTHY AQUIFER SYSTEM WHICH CONSISTS OF AQUIFERS COMPOSED OF SAND AND GRAVEL AND CONFINING UNITS OF SILTS AND CLAYS.

Show Calculations of Ground Water Drinking Water Populations for each Aquifer:
Provide apportionment calculations for blended supply systems.
County average number of persons per household: _____ Reference _____

GLOUCESTER CITY WATER DEPT.- FOUR WELLS >1/2-1 mile, 12,500 people serviced. BROOKLAWN WATER DEPT.- THREE WELLS >1/2-1 MILE, 2,520 PEOPLE SERVICED. NATIONAL PARK WATER DEPT.- TWO WELLS > 3-4 MILES, 3,550 PEOPLE SERVICED. N.J. AMERICAN WATER DEPT. - FIVE WELLS > 3-4 MILES, TWO WELLS > 2-3 MILES. SERVICES 23,440 PEOPLE. COLLINGSWOOD WATER DEPT.- SIX WELLS > 3-4 MILES, ONE WELL >2-3 MILES. SERVICES 20,000 PEOPLE. BELLMAWR WATER DEPT.- TWO WELLS >1-2 MILES, TWO WELLS >2-3 MILES. SERVICES 9,520 PEOPLE. CAMDEN CITY WATER DEPT.- THREE WELLS > 3-4 MILES, SERVICE 20,000 PEOPLE. WEST DEPTFORD WATER DEPT.- ONE WELL >2-3 MILES, ONE WELL >3-4 MILES, PART OF AN INTERCONNECTED SYSTEM WITH A TOTAL OF SEVEN WELLS. SYSTEM SERVICES 19,000 PEOPLE. WESTVILLE WATER DEPT. THREE WELLS >1-2 MILES, 7000 PEOPLE SERVICED. DEPTFORD TOWNSHIP MUA - ONE WELL >2-3 MILES, SERVICES 1,100 PEOPLE. WOODBURY TOWNSHIP WATER DEPT.- TWO WELLS >3-4 MILES. PART OF AN INTERCONNECTED SYSTEM COMPRISED OF FIVE WELLS, THIS SYSTEM SERVICES 11,920 PEOPLE. HADDON TWP. WATER DEPT.- FOUR WELLS >3-4 MILES, 12,000 PEOPLE SERVICED. TWO DOMESTIC WELLS ARE LOCATED WITHIN A 1 MILE RADIUS OF THE SITE. APPROXIMATELY 64 RESIDENTS ARE SERVICED BY PRIVATE WELLS IN A >3-4 MILE RADIUS.

GROUND WATER PATHWAY WORKSHEET

LIKELIHOOD OF RELEASE	Score	Data Type	Refs
1. OBSERVED RELEASE: If sampling data or direct observation support a release to the aquifer, assign a score of 550. Record observed release substances on SI Table 4.			
2. POTENTIAL TO RELEASE: Depth to aquifer: <u>UNKNOWN</u> feet. If sampling data do not support a release to the aquifer, and the site is in karst terrain or the depth to aquifer is 70 feet or less, assign a score of 500; otherwise, assign a score of 340. Optionally, evaluate potential to release according to HRS Section 3.	500	E	SI GW
LR =		500	

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TARGETS

<p>Are any wells part of a blended system? Yes <u>✓</u> No <u> </u> If yes, attach a page to show apportionment calculations.</p> <p>3. ACTUAL CONTAMINATION TARGETS: If analytical evidence indicates that any target drinking water well for the aquifer has been exposed to a hazardous substance from the site, evaluate the factor score for the number of people served (SI Table 5).</p> <p>Level I: <u> </u> people x 10 = <u> </u> Level II: <u> </u> people x 1 = <u> </u> Total = <u> </u></p>				
4. POTENTIAL CONTAMINATION TARGETS: Determine the number of people served by drinking water wells for the aquifer or overlying aquifers that are not exposed to a hazardous substance from the site; record the population for each distance category in SI Table 6a or 6b. Sum the population values and multiply by 0.1.	1445.6	E	SI	
5. NEAREST WELL: Assign a score of 50 for any Level I Actual Contamination Targets for the aquifer or overlying aquifer. Assign a score of 45 if there are Level II targets but no Level I targets. If no Actual Contamination Targets exist, assign the Nearest Well score from SI Table 6a or 6b. If no drinking water wells exist within 4 miles, assign 0.	9	E	SI	
6. WELLHEAD PROTECTION AREA (WHPA): If any source lies within or above a WHPA for the aquifer, or if a ground water observed release has occurred within a WHPA, assign a score of 20; assign 5 if neither condition applies but a WHPA is within 4 miles; otherwise assign 0.	0			
7. RESOURCES: Assign a score of 5 if one or more ground water resource applies; assign 0 if none applies.	0			

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Sum of Targets T= 1454.6

SI TABLE 6 (From HRS TABLE 3-12): VALUES FOR POTENTIAL CONTAMINATION GROUND WATER TARGET POPULATIONS

SI Table 6a: Other Than Karst Aquifers

Distance from Site	Pop.	Nearest Well (choose highest)	Population Served by Wells within Distance Category												Pop. Value	Ref.
			1 to 10	11 to 30	31 to 100	101 to 300	301 to 1000	1001 to 3000	3001 to 10,000	10,001 to 30,000	30,001 to 100,000	100,001 to 300,000	300,001 to 1,000,000	1,000,000 to 3,000,000		
0 to $\frac{1}{4}$ mile	0	20	4	17	53	164	522	1,633	5,214	16,325	52,137	163,246	521,360	1,632,455	0	SI NARRATIVE GW SEC.
$>\frac{1}{4}$ to $\frac{1}{2}$ mile	0	18	2	11	33	102	324	1,013	3,233	10,122	32,325	101,213	323,243	1,012,122	0	
$>\frac{1}{2}$ to 1 mile	15,020	9	1	5	17	52	167	523	1,669	5,224	16,684	52,239	166,835	522,385	5,224	
>1 to 2 miles	11,760	5	0.7	3	10	30	94	294	939	2,939	9,385	29,384	93,845	293,842	2,939	
>2 to 3 miles	24,766	3	0.5	2	7	21	68	212	678	2,122	6,778	21,222	67,777	212,219	2,122	
>3 to 4 miles	90,875	2	0.3	1	4	13	42	131	417	1,306	4,171	13,060	41,709	130,596	4,171	
Nearest Well =		9													Sum =	
															14456	

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SI TABLE 6 (From HRS TABLE 3-12): VALUES FOR POTENTIAL CONTAMINATION GROUND WATER TARGET POPULATIONS (continued)

SI Table 6b: Karst Aquifers

Distance from Site	Pop.	Nearest Well (choose highest)	Population Served by Wells within Distance Category												Pop. Value	Ref.
			1 to 10	11 to 30	31 to 100	101 to 300	301 to 1000	1001 to 3000	3001 to 10,000	10,001 to 30,000	30,001 to 100,000	100,001 to 300,000	300,001 to 1,000,000	1,000,000 to 3,000,000		
0 to $\frac{1}{4}$ mile		20	4	17	53	164	522	1,633	5,214	16,325	52,137	163,246	521,360	1,632,455		
$>\frac{1}{4}$ to $\frac{1}{2}$ mile		20	2	11	33	102	324	1,013	3,233	10,122	32,325	101,213	323,243	1,012,122		
$>\frac{1}{2}$ to 1 mile		20	2	9	26	82	261	817	2,607	8,163	26,068	81,623	260,680	816,227		
>1 to 2 miles		20	2	9	26	82	261	817	2,607	8,163	26,068	81,623	260,680	816,227		
>2 to 3 miles		20	2	9	26	82	261	817	2,607	8,163	26,068	81,623	260,680	816,227		
>3 to 4 miles		20	2	9	26	82	261	817	2,607	8,163	26,068	81,623	260,680	816,227		

Nearest Well =

Sum =

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GROUND WATER PATHWAY WORKSHEET (concluded)

WASTE CHARACTERISTICS	Score	Data Type	Does not Apply
8. If any Actual Contamination Targets exist for the aquifer or overlying aquifers, assign the calculated hazardous waste quantity score or a score of 100, whichever is greater; if no Actual Contamination Targets exist, assign the hazardous waste quantity score calculated for sources available to migrate to ground water.	10	E	
9. Assign the highest ground water toxicity/mobility value from SI Table 3 or 4.	100		
10. Multiply the ground water toxicity/mobility and hazardous waste quantity scores. Assign the Waste Characteristics score from the table below: (from HRS Table 2-7)	1000		

Product	WC Score
0	0
>0 to <10	1
10 to <100	2
100 to <1,000	3
1,000 to <10,000	6
10,000 to <1E + 05	10
1E + 05 to <1E + 06	18
1E + 06 to <1E + 07	32
1E + 07 to <1E + 08	56
1E + 08 or greater	100

WC = 6

Multiply LR by T and by WC. Divide the product by 82,500 to obtain the ground water pathway score for each aquifer. Select the highest aquifer score. If the pathway score is greater than 100, assign 100.

GROUND WATER PATHWAY SCORE:

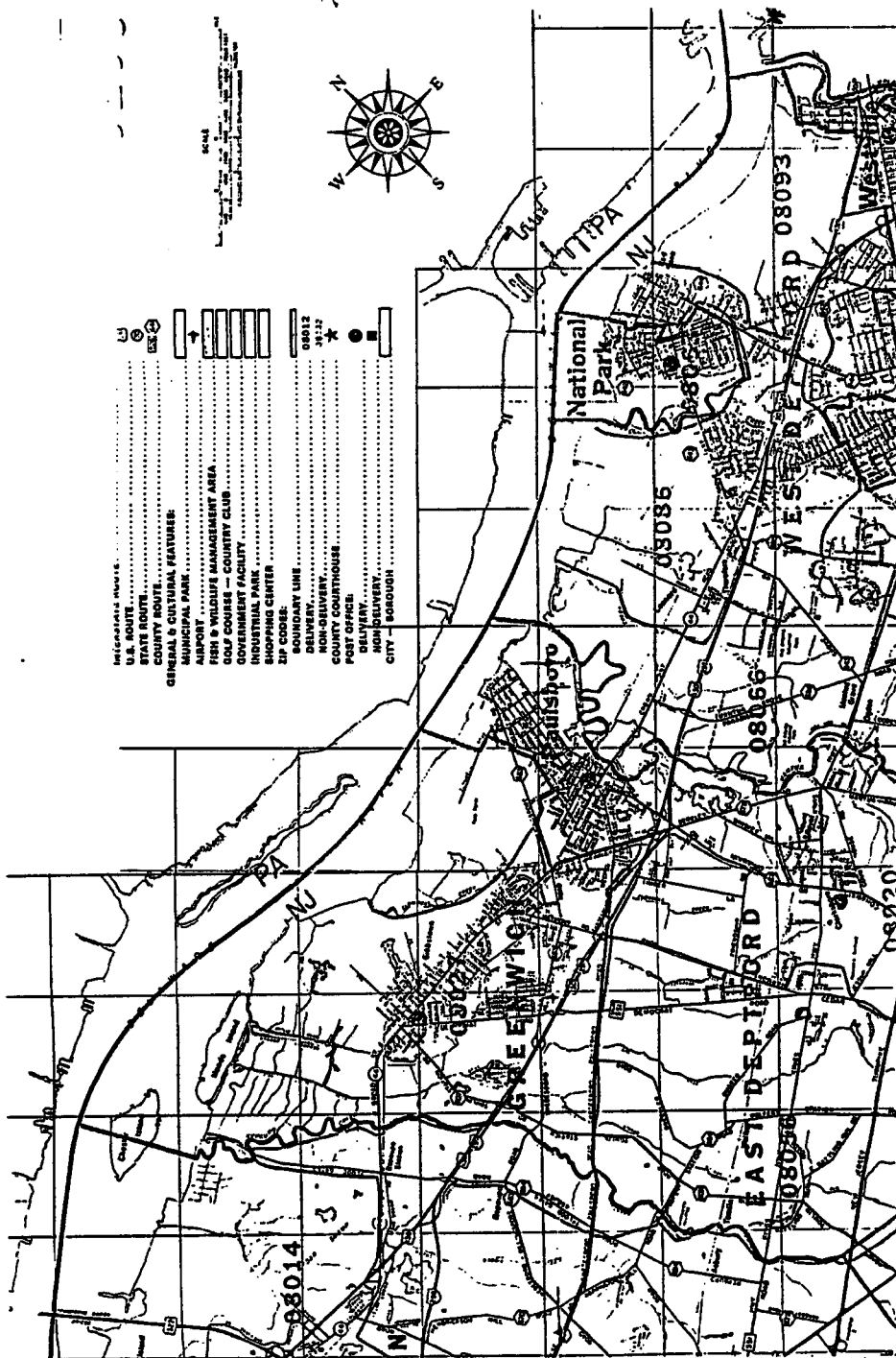
$$\frac{LR \times T \times WC}{82,500}$$

52.89
(Maximum of 100)

SURFACE WATER PATHWAY

Sketch of the Surface Water Migration Route:

Label all surface water bodies. Include runoff route and drainage direction, probable point of entry, and 15-mile target distance limit. Mark sample locations, intakes, fisheries, and sensitive environments. Indicate flow directions, tidal influence, and rate.



SURFACE WATER PATHWAY

Surface Water Observed Release Substances Summary Table

On SI Table 7, list the hazardous substances detected in surface water samples for the watershed, which can be attributed to the site. Include only those substances in observed releases (direct observation) or with concentration levels significantly above background levels. Obtain toxicity, persistence, bioaccumulation potential, and ecotoxicity values from SCDM. Enter the highest toxicity/persistence, toxicity/persistence/bioaccumulation, and ecotoxicity/persistence/ecobioaccumulation values in the spaces provided.

- TP = Toxicity x Persistence
- TPB = TP x bioaccumulation
- ETPB = EP x bioaccumulation (EP = ecotoxicity x persistence)

Drinking Water Actual Contamination Targets Summary Table

For an observed release at or beyond a drinking water intake, on SI Table 8 enter each hazardous substance by sample ID and the detected concentration. For surface water sediment samples detecting a hazardous substance at or beyond an intake, evaluate the intake as Level II contamination. Obtain benchmark, cancer risk, and reference dose concentrations for each substance from SCDM. For MCL and MCLG benchmarks, determine the highest percentage of benchmark obtained for any substance. For cancer risk and reference dose, sum the percentages of the substances listed. If benchmark, cancer risk, or reference dose concentrations are not available for a particular substance, enter N/A for the percentage. If the highest benchmark percentage or the percentage sum calculated for cancer risk or reference dose equals or exceeds 100%, evaluate the population served by the intake as a Level I target. If the percentages are less than 100% or all are N/A, evaluate the population served by the intake as a Level II target.

SI TABLE 7: SURFACE WATER OBSERVED RELEASE SUBSTANCES

Sample ID	Hazardous Substance	Bckgrd. Conc.	Toxicity/ Persistence	Toxicity/ Persis./ Bioaccum	Ecotoxicity/ Persis/ Ecobioaccum	References
Highest Values						

SI TABLE 8: SURFACE WATER DRINKING WATER ACTUAL CONTAMINATION TARGETS

Intake ID: _____ Sample Type _____ Level I _____ Level II _____ Population Served _____ References _____

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Sample ID	Hazardous Substance	Conc. (µg/L)	Benchmark Conc. (MCL or MCLG)	% of Benchmark	Cancer Risk Conc.	% of Cancer Risk Conc.	RID	% of RID
			Highest Percent		Sum of Percents		Sum of Percents	

Intake ID: _____ Sample Type _____ Level I _____ Level II _____ Population Served _____ References _____

Sample ID	Hazardous Substance	Conc. (µg/L)	Benchmark Conc. (MCL or MCLG)	% of Benchmark	Cancer Risk Conc.	% of Cancer Risk Conc.	RID	% of RID
			Highest Percent		Sum of Percents		Sum of Percents	

SURFACE WATER PATHWAY LIKELIHOOD OF RELEASE AND DRINKING WATER THREAT WORKSHEET

LIKELIHOOD OF RELEASE- OVERLAND/FLOOD MIGRATION

	Score	Data Type	Refs												
1. OBSERVED RELEASE: If sampling data or direct observation support a release to surface water in the watershed, assign a score of 550. Record observed release substances on SI Table 7.															
2. POTENTIAL TO RELEASE: Distance to surface water: <u>10</u> (feet) If sampling data do not support a release to surface water in the watershed, use the table below to assign a score from the table below based on distance to surface water and flood frequency. <table border="1" style="margin-top: 10px; width: 100%; border-collapse: collapse;"> <tr> <td>Distance to surface water <2500 feet</td> <td>500</td> </tr> <tr> <td>Distance to surface water >2500 feet, and:</td> <td></td> </tr> <tr> <td> Site in annual or 10-yr floodplain</td> <td>500</td> </tr> <tr> <td> Site in 100-yr floodplain</td> <td>400</td> </tr> <tr> <td> Site in 500-yr floodplain</td> <td>300</td> </tr> <tr> <td> Site outside 500-yr floodplain</td> <td>100</td> </tr> </table> Optionally, evaluate surface water potential to release according to HRS Section 4.1.2.1.2	Distance to surface water <2500 feet	500	Distance to surface water >2500 feet, and:		Site in annual or 10-yr floodplain	500	Site in 100-yr floodplain	400	Site in 500-yr floodplain	300	Site outside 500-yr floodplain	100	500	E	SI
Distance to surface water <2500 feet	500														
Distance to surface water >2500 feet, and:															
Site in annual or 10-yr floodplain	500														
Site in 100-yr floodplain	400														
Site in 500-yr floodplain	300														
Site outside 500-yr floodplain	100														

NARRATIVE
SW SECTION

LR = 500

LIKELIHOOD OF RELEASE GROUND WATER TO SURFACE WATER MIGRATION

	Score	Data Type	Refs
1. OBSERVED RELEASE: If sampling data or direct observation support a release to surface water in the watershed, assign a score of 550. Record observed release substances on SI Table 7. NOTE: Evaluate ground water to surface water migration only for a surface water body that meets all of the following conditions: <ol style="list-style-type: none"> 1) A portion of the surface water is within 1 mile of site sources having a containment factor greater than 0. 2) No aquifer discontinuity is established between the source and the above portion of the surface water body. 3) The top of the uppermost aquifer is at or above the bottom of the surface water. Elevation of top of uppermost aquifer _____ Elevation of bottom of surface water body _____			
2. POTENTIAL TO RELEASE: Use the ground water potential to release. Optionally, evaluate surface water potential to release according to HRS Section 3.1.2.			

LR =

SURFACE WATER PATHWAY LIKELIHOOD OF RELEASE AND DRINKING WATER THREAT WORKSHEET (CONTINUED)

DRINKING WATER THREAT TARGETS

Score	Data Type	Refs																
<p>Record the water body type, flow, and number of people served by each drinking water intake within the target distance limit in the watershed. If there is no drinking water intake within the target distance limit, assign 0 to factors 3, 4, and 5.</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 25%;">Intake Name</th> <th style="width: 25%;">Water Body Type</th> <th style="width: 25%;">Flow</th> <th style="width: 25%;">People Served</th> </tr> </thead> <tbody> <tr><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td></tr> </tbody> </table> <p>Are any intakes part of a blended system? Yes _____ No _____ If yes, attach a page to show apportionment calculations.</p> <p>3. ACTUAL CONTAMINATION TARGETS: If analytical evidence indicates a drinking water intake has been exposed to a hazardous substance from the site, list the intake name and evaluate the factor score for the drinking water population (SI Table 8).</p> <p>_____</p> <p>Level I: _____ people x 10 = _____ Level II: _____ people x 1 = _____ Total = _____</p>			Intake Name	Water Body Type	Flow	People Served												
Intake Name	Water Body Type	Flow	People Served															
0	E	<p>SI NARRATIVE SURFACE WATER SECTION</p>																
<p>4. POTENTIAL CONTAMINATION TARGETS: Determine the number of people served by drinking water intakes for the watershed that have not been exposed to a hazardous substance from the site. Assign the population values from SI Table 9. Sum the values and multiply by 0.1.</p>																		
0																		
<p>5. NEAREST INTAKE: Assign a score of 50 for any Level I Actual Contamination Drinking Water Targets for the watershed. Assign a score of 45 if there are Level II targets for the watershed, but no Level I targets. If no Actual Contamination Drinking Water Targets exist, assign a score for the intake nearest the PPE from SI Table 9. If no drinking water intakes exist, assign 0.</p>																		
0																		
<p>6. RESOURCES: Assign a score of 5 if one or more surface water resource applies; assign 0 if none applies.</p> <ul style="list-style-type: none"> • Irrigation (5 acre minimum) of commercial food crops or commercial forage crops • Watering of commercial livestock • Ingredient in commercial food preparation • Major or designated water recreation area, excluding drinking water use 																		
5																		
SUM OF TARGETS T=		5																

SI TABLE 9 (From HRS Table 4-14): DILUTION-WEIGHTED POPULATION VALUES FOR POTENTIAL CONTAMINATION FOR SURFACE WATER MIGRATION PATHWAY

Type of Surface Water Body	Pop.	Nearest Intake	Number of people									Pop. Value
			0	1 to 10	11 to 30	31 to 100	101 to 300	301 to 1,000	1,001 to 3,000	3,001 to 10,000	10,001 to 30,000	
Minimal Stream (<10 cfs)		20	0	4	17	53	164	522	1,633	5,214	16,325	
Small to moderate stream (10 to 100 cfs)		2	0	0.4	2	5	16	52	163	521	1,633	
Moderate to large stream (> 100 to 1,000 cfs)		0	0	0.04	0.2	0.5	2	5	16	52	163	
Large Stream to river (>1,000 to 10,000 cfs)		0	0	0.004	0.02	0.05	0.2	0.5	2	5	16	
Large River (> 10,000 to 100,000 cfs)		0	0	0	0.002	0.005	0.02	0.05	0.2	0.5	16	
Very Large River (>100,000 cfs)		0	0	0	0	0.001	0.002	0.005	0.02	0.05	0.2	
Shallow ocean zone or Great Lake (depth < 20 feet)		0	0	0	0.002	0.005	0.02	0.05	0.2	0.5	2	
Moderate ocean zone or Great Lake (Depth 20 to 200 feet)		0	0	0	0	0.001	0.002	0.005	0.02	0.05	0.2	
Deep ocean zone or Great Lake (depth > 200 feet)		0	0	0	0	0	0.001	0.003	0.008	0.03	0.08	
3-mile mixing zone in quiet flowing river (≥ 10 cfs)		10	0	2	9	26	82	261	817	2,607	8,163	
Nearest Intake =			Sum =									

References _____

SURFACE WATER PATHWAY

Human Food Chain Actual Contamination Targets Summary Table

On SI Table 10, list the hazardous substances detected in sediment, aqueous, sessile benthic organism tissue, or fish tissue samples (taken from fish caught within the boundaries of the observed release) by sample ID and concentration. Evaluate fisheries within the boundaries of observed releases detected by sediment or aqueous samples as Level II, if at least one observed release substance has a bioaccumulation potential factor value of 500 or greater (see SI Table 7). Obtain benchmark, cancer risk, and reference dose concentrations from SCDM. For FDAAL benchmarks, determine the highest percentage of benchmark obtained for any substance. For cancer risk and reference dose, sum the percentages for the substances listed. If benchmark, cancer risk, or reference dose concentrations are not available for a particular substance, enter N/A for the percentage. If the highest benchmark percentage sum calculated for cancer risk or reference dose equals or exceeds 100%, evaluate this portion of the fishery as subject to Level I concentrations. If the percentages are less than 100% or all are N/A, evaluate the fishery as a Level II target.

Sensitive Environment Actual Contamination Targets Summary Table

On SI Table 11, list each hazardous substance detected in aqueous or sediment samples at or beyond wetlands or a surface water sensitive environment by sample ID. Record the concentration. If contaminated sediments or tissues are detected at or beyond a sensitive environment, evaluate the sensitive environment as Level II. Obtain benchmark concentrations from SCDM. For AWQC/AALAC benchmarks, determine the highest percentage of benchmark of the substances detected in aqueous samples. If benchmark concentrations are not available for a particular substance, enter N/A for the percentage. If the highest benchmark percentage equals or exceeds 100%, evaluate that part of the sensitive environment subject to Level I concentrations. If the percentage is less than 100%, or all are N/A, evaluate the sensitive environment as Level II.

SI TABLE 10: HUMAN FOOD CHAIN ACTUAL CONTAMINATION TARGETS FOR WATERSHED

Fishery ID: _____ Sample Type _____ Level I _____ Level II _____ References _____

Sample ID	Hazardous Substance	Conc. (mg/kg)	Benchmark Concentration (FDAAL)	% of Benchmark	Cancer Risk Concentration.	% of Cancer Risk Concentration	RID	% of RID
Highest Percent					Sum of Percents		Sum of Percents	

SI TABLE 11: SENSITIVE ENVIRONMENT ACTUAL CONTAMINATION TARGETS FOR WATERSHED

Environment ID: _____ Sample Type _____ Level I _____ Level II _____ Environment Value _____

Sample ID	Hazardous Substance	Conc.. (µg/L)	Benchmark Concentration (AWQC or AALAC)	% of Benchmark	References
Highest Percent					

Environment ID: _____ Sample Type _____ Level I _____ Level II _____ Environment Value _____

Sample ID	Hazardous Substance	Conc.. (µg/L)	Benchmark Concentration (AWQC or AALAC)	% of Benchmark	References
Highest Percent					

SURFACE WATER PATHWAY (continued) HUMAN FOOD CHAIN THREAT WORKSHEET

HUMAN FOOD CHAIN THREAT TARGETS

Record the water body type and flow for each fishery within the target distance limit. If there is no fishery within the target distance limit, assign a score of 0 at the bottom of this page.

Fishery Name _____	Water Body <u>RIVER</u>	Flow <u>5900</u> cfs	
<u>DELAWARE RIVER</u>			
Species _____	Production _____	lbs/yr	
Species _____	Production _____	lbs/yr	
Fishery Name _____ Water Body _____ Flow _____ cfs			
Species _____	Production _____	lbs/yr	
Species _____	Production _____	lbs/yr	
Fishery Name _____ Water Body _____ Flow _____ cfs			
Species _____	Production _____	lbs/yr	
Species _____	Production _____	lbs/yr	

FOOD CHAIN INDIVIDUAL

7. ACTUAL CONTAMINATION FISHERIES:

If analytical evidence indicates that a fishery has been exposed to a hazardous substance with a bioaccumulation factor greater than or equal to 500 (SI Table 10), assign a score of 50 if there is a Level I fishery. Assign 45 if there is a Level II fishery, but no Level I fishery.

8. POTENTIAL CONTAMINATION FISHERIES:

If there is a release of a substance with a bioaccumulation factor greater than or equal to 500 to a watershed containing fisheries within the target distance limit, but there are no Level I or Level II fisheries, assign a score of 20.

If there is no observed release to the watershed, assign a value for potential contamination fisheries from the table below using the lowest flow at all fisheries within the target distance limit:

Lowest Flow	FCI Value
<10 cfs	20
10 to 100 cfs	2
>100 cfs, coastal tidal waters, oceans, or Great Lakes	0
3-mile mixing zone in quiet flowing river	10

FCI Value =

SUM OF TARGETS T =

Score Data Type Refs

SI

ATTACH.

X

0

0

SURFACE WATER PATHWAY (continued) ENVIRONMENTAL THREAT WORKSHEET

When measuring length of wetlands that are located on both sides of a surface water body, sum both frontage lengths. For a sensitive environment that is more than one type, assign a value for each type.

ENVIRONMENTAL THREAT TARGETS	Score	Data Type	Refs																																													
<p>Record the water body type and flow for each surface water sensitive environment within the target distance (see SI Table 12). If there is no sensitive environment within the target distance limit, assign a score of 0 at the bottom of the page.</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: left;">Environment Name</th> <th style="text-align: left;">Water Body Type</th> <th style="text-align: left;">Flow</th> </tr> </thead> <tbody> <tr> <td>TIDAL FLATS</td> <td>DELAWARE RIVER</td> <td>NA cfs</td> </tr> <tr><td> </td><td> </td><td>cfs</td></tr> <tr><td> </td><td> </td><td>cfs</td></tr> <tr><td> </td><td> </td><td>cfs</td></tr> <tr><td> </td><td> </td><td>cfs</td></tr> <tr><td> </td><td> </td><td>cfs</td></tr> </tbody> </table> <p>9. ACTUAL CONTAMINATION SENSITIVE ENVIRONMENTS: If sampling data or direct observation indicate any sensitive environment has been exposed to a hazardous substance from the site, record this information on SI Table 11, and assign a factor value for the environment (SI Tables 13 and 14).</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: left;">Environment Name</th> <th style="text-align: left;">Environment Type and Value (SI Tables 13 & 14)</th> <th style="text-align: left;">Multiplier (10 for Level I, 1 for Level II)</th> <th style="text-align: left;">Product</th> </tr> </thead> <tbody> <tr><td> </td><td> </td><td>x</td><td>=</td></tr> <tr><td> </td><td> </td><td>x</td><td>=</td></tr> <tr><td> </td><td> </td><td>x</td><td>=</td></tr> <tr><td> </td><td> </td><td>x</td><td>=</td></tr> <tr> <td colspan="2" style="text-align: right;">Sum =</td> <td></td> <td></td> </tr> </tbody> </table>	Environment Name	Water Body Type	Flow	TIDAL FLATS	DELAWARE RIVER	NA cfs			cfs			cfs			cfs			cfs			cfs	Environment Name	Environment Type and Value (SI Tables 13 & 14)	Multiplier (10 for Level I, 1 for Level II)	Product			x	=			x	=			x	=			x	=	Sum =				0.0025		
Environment Name	Water Body Type	Flow																																														
TIDAL FLATS	DELAWARE RIVER	NA cfs																																														
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<p>10. POTENTIAL CONTAMINATION SENSITIVE ENVIRONMENTS:</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: left;">Flow</th> <th style="text-align: left;">Dilution Weight (SI Table 12)</th> <th style="text-align: left;">Environment Type and Value (SI Tables 13 & 14)</th> <th style="text-align: left;">Pot. Cont.</th> <th style="text-align: left;">Product</th> </tr> </thead> <tbody> <tr> <td>NA cfs</td> <td>0.001 x</td> <td>25 x</td> <td>0.1 =</td> <td></td> </tr> <tr><td>cfs</td><td>x</td><td>x</td><td>0.1 =</td><td></td></tr> <tr><td>cfs</td><td>x</td><td>x</td><td>0.1 =</td><td></td></tr> <tr><td>cfs</td><td>x</td><td>x</td><td>0.1 =</td><td></td></tr> <tr><td>cfs</td><td>x</td><td>x</td><td>0.1 =</td><td></td></tr> <tr> <td colspan="4" style="text-align: right;">Sum =</td> <td></td> </tr> </tbody> </table> <p style="text-align: right;">T =</p>	Flow	Dilution Weight (SI Table 12)	Environment Type and Value (SI Tables 13 & 14)	Pot. Cont.	Product	NA cfs	0.001 x	25 x	0.1 =		cfs	x	x	0.1 =		cfs	x	x	0.1 =		cfs	x	x	0.1 =		cfs	x	x	0.1 =		Sum =																	
Flow	Dilution Weight (SI Table 12)	Environment Type and Value (SI Tables 13 & 14)	Pot. Cont.	Product																																												
NA cfs	0.001 x	25 x	0.1 =																																													
cfs	x	x	0.1 =																																													
cfs	x	x	0.1 =																																													
cfs	x	x	0.1 =																																													
cfs	x	x	0.1 =																																													
Sum =																																																

**SI TABLE 12 (HRS Table 4-13):
SURFACE WATER DILUTION WEIGHTS**

Type of Surface Water Body		Assigned Dilution Weight
Descriptor	Flow Characteristics	
Minimal stream	< 10 cfs	1
Small to moderate stream	10 to 100 cfs	0.1
Moderate to large stream	> 100 to 1,000 cfs	0.01
Large stream to river	> 1,000 to 10,000 cfs	0.001
Large river	> 10,000 to 100,000 cfs	0.0001
Very large river	> 100,000 cfs	0.00001
Coastal tidal waters	Flow not applicable; depth not applicable	0.001
Shallow ocean zone or Great Lake	Flow not applicable; depth less than 20 feet	0.001
Moderate depth ocean zone or Great Lake	Flow not applicable; depth 20 to 200 feet	0.0001
Deep ocean zone or Great Lake	Flow not applicable; depth greater than 200 feet	0.000005
3-mile mixing zone in quiet flowing river	10 cfs or greater	0.5

**SI TABLE 13 (HRS TABLE 4-23):
SURFACE WATER AND AIR SENSITIVE ENVIRONMENTS VALUES**

SENSITIVE ENVIRONMENT	ASSIGNED VALUE
Critical habitat for Federal designated endangered or threatened species Marine Sanctuary National Park Designated Federal Wilderness Area Ecologically important areas identified under the Coastal Zone Wilderness Act Sensitive Areas identified under the National Estuary Program or Near Coastal Water Program of the Clean Water Act Critical Areas identified under the Clean Lakes Program of the Clean Water Act (subareas in lakes or entire small lakes) National Monument (air pathway only) National Seashore Recreation Area National Lakeshore Recreation Area	100
Habitat known to be used by Federal designated or proposed endangered or threatened species National Preserve National or State Wildlife Refuge Unit of Coastal Barrier Resources System Coastal Barrier (undeveloped) Federal land designated for the protection of natural ecosystems Administratively Proposed Federal Wilderness Area Spawning areas critical for the maintenance of fish/shellfish species within a river system, bay, or estuary Migratory pathways and feeding areas critical for the maintenance of anadromous fish species within river reaches or areas in lakes or coastal tidal waters in which the fish spend extended periods of time Terrestrial areas utilized by large or dense aggregations of vertebrate animals (semi-aquatic foragers) for breeding National river reach designated as recreational	75
Habitat known to be used by State designated endangered or threatened species Habitat known to be used by a species under review as to its Federal endangered or threatened status Coastal Barrier (partially developed) Federally designated Scenic or Wild River	50
State land designated for wildlife or game management State designated Scenic or Wild River State designated Natural Area Particular areas, relatively small in size, important to maintenance of unique biotic communities	25
State designated areas for the protection of maintenance of aquatic life under the Clean Water Act	5
Wetlands See SI Table 14 (Surface Water Pathway) or SI Table 23 (Air Pathway)	

**SI TABLE 14 (HRS TABLE 4-24): SURFACE WATER
WETLANDS FRONTAGE VALUES**

Total Length of Wetlands	Assigned Value
Less than 0.1 mile	0
0.1 to 1 mile	25
Greater than 1 to 2 miles	50
Greater than 2 to 3 miles	75
Greater than 3 to 4 miles	100
Greater than 4 to 8 miles	150
Greater than 8 to 12 miles	250
Greater than 12 to 16 miles	350
Greater than 16 to 20 miles	450
Greater than 20 miles	500

SURFACE WATER PATHWAY (concluded)

WASTE CHARACTERISTICS, THREAT, AND PATHWAY SCORE SUMMARY

WASTE CHARACTERISTICS

Score

14. If an Actual Contamination Target (drinking water, human food chain, or environmental threat) exists for the watershed, assign the calculated hazardous waste quantity score, or a score of 100, whichever is greater.

15. Assign the highest value from SI Table 7 (observed release) or SI Table 3 (no observed release) for the hazardous substance waste characterization factors below. Multiply each by the surface water hazardous waste quantity score and determine the waste characteristics score for each threat.

WC Score (from Table)
(Maximum of 100)

	Substance Value		HWQ		Product
Drinking Water Threat Toxicity/Persistence	10000	x	10	=	100000
Food Chain Threat Toxicity/Persistence Bioaccumulation	5×10^8	x	10	=	5×10^9
Environmental Threat Ecotoxicity/Persistence/ Ecobioaccumulation	5×10^8	x	10	=	5×10^9

18
100
100

Product	WC Score
0	0
>0 to <10	1
10 to <100	2
100 to <1,000	3
1,000 to <10,000	6
10,000 to <1E + 05	10
1E + 05 to <1E + 06	18
1E + 06 to <1E + 07	32
1E + 07 to <1E + 08	56
1E + 08 to <1E + 09	100
1E + 09 to <1E + 10	180
1E + 10 to <1E + 11	320
1E + 11 to <1E + 12	560
1E + 12 or greater	1000

SURFACE WATER PATHWAY THREAT SCORES

Threat	Likelihood of Release (LR) Score	Targets (T) Score	Pathway Waste Characteristics (WC) Score (determined above)	Threat Score $\frac{LR \times T \times WC}{82,500}$
Drinking Water	500	5	18	(maximum of 100) 0.54
Human Food Chain	500	0	100	(maximum of 100) 0
Environmental	500	0.0025	100	(maximum of 60) 0.001

SURFACE WATER PATHWAY SCORE
(Drinking Water Threat + Human Food Chain Threat + Environmental Threat)

(maximum of 100)

0.541

SOIL EXPOSURE PATHWAY

If there is no observed contamination (e.g., ground water plume with no known surface source), do not evaluate the soil exposure pathway. Discuss evidence for no soil exposure pathway.

Soil Exposure Resident Population Targets Summary

For each property (duplicate page 35 as necessary):

If there is an area of observed contamination on the property and within 200 feet of a residence, school, or day care center, enter on Table 15 each hazardous substance by sample ID. Record the detected concentration. Obtain cancer risk, and reference dose concentrations from SCDM. Sum the cancer risk and reference dose percentages for the substances listed. If cancer risk or reference dose concentrations are not available for a particular substance, enter N/A for the percentage. If the percentage sum calculated for cancer risk or reference dose equals or exceeds 100%, evaluate the residents and students as Level I. If both percentages are less than 100% or all are N/A, evaluate the targets as Level II.

SI TABLE 15: SOIL EXPOSURE RESIDENT POPULATION TARGETS

Residence ID: _____ Level I _____ Level II _____ Population _____

Sample ID	Hazardous Substance	Conc. (mg/kg)	Cancer Risk Concentration	% of Cancer Risk Conc.	RfD	% of RfD	Toxicity Value	References
			Highest Percent		Sum of Percents		Sum of Percents	

Residence ID: _____ Level I _____ Level II _____ Population _____

Sample ID	Hazardous Substance	Conc. (mg/kg)	Cancer Risk Concentration	% of Cancer Risk Conc.	RfD	% of RfD	Toxicity Value	References
			Highest Percent		Sum of Percents		Sum of Percents	

Residence ID: _____ Level I _____ Level II _____ Population _____

-Sample ID	Hazardous Substance	Conc. (mg/kg)	Cancer Risk Concentration	% of Cancer Risk Conc.	RfD	% of RfD	Toxicity Value	References
			Highest Percent		Sum of Percents		Sum of Percents	

C-35

SOIL EXPOSURE PATHWAY WORKSHEET RESIDENT POPULATION THREAT

LIKELIHOOD OF EXPOSURE

	Score	Data Type	Refs
1. OBSERVED CONTAMINATION: If evidence indicates presence of observed contamination (depth of 2 feet or less), assign a score of 550; otherwise, assign a 0. Note that a likelihood of exposure score of 0 results in a soil exposure pathway score of 0.	550	HRS	SE NARRATIVE SOIL SECTION
LE =	550		

TARGETS

<p>2. RESIDENT POPULATION: Determine the number of people occupying residences or attending school or day care on or within 200 feet of areas of observed contamination (HRS section 5.1.3).</p> <p>Level I: _____ people x 10 = _____</p> <p>Level II: _____ people x 1 = _____</p> <p style="text-align: right;">Sum =</p>	0														
<p>3. RESIDENT INDIVIDUAL: Assign a score of 50 if any Level I resident population exists. Assign a score of 45 if there are Level II targets but no Level I targets. If no resident population exists (i.e., no Level I or Level II targets), assign 0 (HRS Section 5.1.3).</p>	0														
<p>4. WORKERS: Assign a score from the table below for the total number of workers at the site and nearby facilities with areas of observed contamination associated with the site.</p> <table border="1" style="width: 100%; margin: 10px 0;"> <thead> <tr> <th>Number of Workers</th> <th>Score</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>0</td> </tr> <tr> <td>1 to 100</td> <td>5</td> </tr> <tr> <td>101 to 1,000</td> <td>10</td> </tr> <tr> <td>>1,000</td> <td>15</td> </tr> </tbody> </table>	Number of Workers	Score	0	0	1 to 100	5	101 to 1,000	10	>1,000	15	0				
Number of Workers	Score														
0	0														
1 to 100	5														
101 to 1,000	10														
>1,000	15														
<p>5. TERRESTRIAL SENSITIVE ENVIRONMENTS: Assign a value for each terrestrial sensitive environment (SI Table 16) in an area of observed contamination.</p> <table border="1" style="width: 100%; margin: 10px 0;"> <thead> <tr> <th>Terrestrial Sensitive Environment Type</th> <th>Value</th> </tr> </thead> <tbody> <tr><td> </td><td> </td></tr> <tr><td> </td><td> </td></tr> <tr><td> </td><td> </td></tr> <tr><td> </td><td> </td></tr> <tr><td> </td><td> </td></tr> </tbody> </table> <p style="text-align: right;">Sum =</p>	Terrestrial Sensitive Environment Type	Value											0		
Terrestrial Sensitive Environment Type	Value														
<p>6. RESOURCES: Assign a score of 5 if any one or more of the following resources is present on an area of observed contamination at the site; assign 0 if none applies.</p> <ul style="list-style-type: none"> • Commercial agriculture • Commercial silviculture • Commercial livestock production or commercial livestock grazing 	0														
Total of Targets T=	0														

**SI TABLE 16 (HRS TABLE 5-5): SOIL EXPOSURE PATHWAY
TERRESTRIAL SENSITIVE ENVIRONMENT VALUES**

TERRESTRIAL SENSITIVE ENVIRONMENT	ASSIGNED VALUE
Terrestrial critical habitat for Federal designated endangered or threatened species National Park Designated Federal Wilderness Area National Monument	100
Terrestrial habitat known to be used by Federal designated or proposed threatened or endangered species National Preserve (terrestrial) National or State terrestrial Wildlife Refuge Federal land designated for protection of natural ecosystems Administratively proposed Federal Wilderness Area Terrestrial areas utilized by large or dense aggregations of animals (vertebrate species) for breeding	75
Terrestrial habitat used by State designated endangered or threatened species Terrestrial habitat used by species under review for Federal designated endangered or threatened status	50
State lands designated for wildlife or game management State designated Natural Areas Particular areas, relatively small in size, important to maintenance of unique biotic communities	25

SOIL EXPOSURE PATHWAY WORKSHEET NEARBY POPULATION THREAT

LIKELIHOOD OF EXPOSURE

		Score	Data Type	Ref.
7.	Attractiveness/Accessibility (from SI Table 17 or HRS Table 5-6)	Value <u>5</u>	HRS	SI NARRATIVE DIRECT CONTACT SECTION
	Area of Contamination (from SI Table 18 or HRS Table 5-7)	Value <u>5</u>		
Likelihood of Exposure (from SI Table 19 or HRS Table 5-8)				
LE =		<u>5</u>		

TARGETS

		Score	Data Type	Ref.
8.	Assign a score of 0 if Level I or Level II resident individual has been evaluated or if no individuals live within 1/4 mile travel distance of an area of observed contamination. Assign a score of 1 if nearby population is within 1/4 mile travel distance and no Level I or Level II resident population has been evaluated.	1	E	GEMS
9.	Determine the population within 1 mile travel distance that is not exposed to a hazardous substance from the site (i.e., properties that are not determined to be Level I or Level II); record the population for each distance category in SI Table 20 (HRS Table 5-10). Sum the population values and multiply by 0.1	9.9		
T =		<u>10.9</u>		

**SI TABLE 17 (HRS TABLE 5-6):
ATTRACTIVENESS/ACCESSIBILITY VALUES**

Area of Observed Contamination	Assigned Value
Designated recreational area	100
Regularly used for public recreation (for example, vacant lots in urban area)	75
Accessible and unique recreational area (for example, vacant lots in urban area)	75
Moderately accessible (may have some access improvements—for example, gravel road) with some public recreation use	50
Slightly accessible (for example, extremely rural area with no road improvement) with some public recreation use	25
Accessible with no public recreation use	10
Surrounded by maintained fence or combination of maintained fence and natural barriers	5
Physically inaccessible to public, with no evidence of public recreation use	0

SI TABLE 18 (HRS TABLE 5-7): AREA OF CONTAMINATION FACTOR VALUES

Total area of the areas of observed contamination (square feet)	Assigned Value
≤ to 5,000	5
> 5,000 to 125,000	20
> 125,000 to 250,000	40
> 250,000 to 375,000	60
> 375,000 to 500,000	80
> 500,000	100

100-40

AREA OF CONTAMINATION FACTOR VALUE	ATTRACTIVENESS/ACCESSIBILITY FACTOR VALUE						
	100	75	50	25	10	5	0
100	500	500	375	250	125	50	0
80	500	375	250	125	50	25	0
60	375	250	125	50	25	5	0
40	250	125	50	25	5	5	0
20	125	50	25	5	5	5	0
5	50	25	5	5	5	5	0

100-40

Travel Distance Category (miles)	Pop.	Number of people within the travel distance category												Pop. Value
		0	1 to 10	11 to 30	31 to 100	101 to 300	301 to 1,000	1,001 to 3,000	3,001 to 10,001	10,001 to 30,000	30,001 to 100,000	100,001 to 300,000	300,001 to 1,000,000	
Greater than 0 to $\frac{1}{4}$	100	0	0.1	0.4	1.0	4	13	41	130	408	1,303	4,081	13,034	11
Greater than $\frac{1}{4}$ to $\frac{1}{2}$	3505	0	0.05	0.2	0.7	2	7	20	65	204	652	2,041	6,517	65
Greater than $\frac{1}{2}$ to 1	8265	0	0.02	0.1	0.3	1	3	10	33	102	326	1,020	3,258	33
Reference(s) <u>GEMS</u>														Sum = 99

SOIL EXPOSURE PATHWAY WORKSHEET (concluded)

WASTE CHARACTERISTICS

10. Assign the hazardous waste quantity score calculated for soil exposure	10
11. Assign the highest toxicity value from SI Table 48 3	10000
12. Multiply the toxicity and hazardous waste quantity scores. Assign the Waste Characteristics score from the table below:	WC = 10

Product	WC Score
0	0
>0 to <10	1
10 to <100	2
100 to <1,000	3
1,000 to < 10,000	6
10,000 to <1E + 05	10
1E + 05 to <1E + 06	18
1E + 06 to <1E + 07	32
1E + 07 to <1E + 08	56
1E + 08 or greater	100

RESIDENT POPULATION THREAT SCORE:

(Likelihood of Exposure, Question 1;
Targets = Sum of Questions 2, 3, 4, 5, 6)

LEX T X WC
82,500

0

NEARBY POPULATION THREAT SCORE:

(Likelihood of Exposure, Question 7;
Targets = Sum of Questions 8, 9)

LEX T X WC
82,500

0.006

SOIL EXPOSURE PATHWAY SCORE:

Resident Population Threat + Nearby Population Threat

0.006 (Maximum of 100)

AIR PATHWAY

Air Pathway Observed Substances Summary Table

On SI Table 21, list the hazardous substances detected in air samples of a release from the site. Include only those substances with concentrations significantly greater than background levels. Obtain benchmark, cancer risk, and reference dose concentrations from SCDM. For NAAQS/NESHAPS benchmarks, determine the highest percentage of benchmark obtained for any substance. For cancer risk and reference dose, sum the percentages for the substances listed. If benchmark, cancer risk, or reference dose concentrations are not available for a particular substance, enter N/A for the percentage. If the highest benchmark percentage or the percentage sum calculated for cancer risk or reference dose equals or exceeds 100%, evaluate targets in the distance category from which the sample was taken and any closer distance categories as Level I. If the percentages are less than 100% or all are N/A, evaluate targets in that distance category and any closer distance categories that are not Level I as Level II.

SI TABLE 21: AIR PATHWAY OBSERVED RELEASE SUBSTANCES

Sample ID: _____ Level I _____ Level II _____ Distance from Sources (mi) _____ References _____

Hazardous Substance	Conc. ($\mu\text{g}/\text{m}^3$)	Gaseous Particulate	Benchmark Conc. (NAAQS or NESHAPS)	% of Benchmark	Cancer Risk Conc.	% of Cancer Risk Conc.	RID	% of RID
Highest Toxicity/Mobility			Highest Percent		Sum of Percents		Sum of Percents	

Sample ID: _____ Level I _____ Level II _____ Distance from Sources (mi) _____ References _____

Hazardous Substance	Conc. ($\mu\text{g}/\text{m}^3$)	Toxicity/Mobility	Benchmark Conc. (NAAQS or NESHAPS)	% of Benchmark	Cancer Risk Conc.	% of Cancer Risk Conc.	RID	% of RID
Highest Toxicity/Mobility			Highest Percent		Sum of Percents		Sum of Percents	

Sample ID: _____ Level I _____ Level II _____ Distance from Sources (mi) _____ References _____

Hazardous Substance	Conc. ($\mu\text{g}/\text{m}^3$)	Toxicity/Mobility	Benchmark Conc. (NAAQS or NESHAPS)	% of Benchmark	Cancer Risk Conc.	% of Cancer Risk Conc.	RID	% of RID
Highest Toxicity/Mobility			Highest Percent		Sum of Percents		Sum of Percents	

C-43

AIR PATHWAY WORKSHEET

LIKELIHOOD OF RELEASE

	Score	Data Type	Refs
1. OBSERVED RELEASE: If sampling data or direct observation support a release to air, assign a score of 550. Record observed release substances on SI Table 21			SI NARRATIVE
2. POTENTIAL TO RELEASE: If sampling data do not support a release to air, assign a score of 500. Optionally, evaluate air migration gaseous and particulate potential to release (HRS Section 6.1.2)	500	E	AIR SECTION
LR = 500			

TARGETS

<p>3. ACTUAL CONTAMINATION POPULATION: Determine the number of people within the target distance limit subject to exposure from a release of a hazardous substance to the air.</p> <p>a) Level I: _____ people x 10 = _____</p> <p>b) Level II: _____ people x 1 = _____</p> <p style="text-align: right;">Total = _____</p>																						
<p>4. POTENTIAL TARGET POPULATION: Determine the number of people within the target distance limit not subject to exposure from a release of a hazardous substance to the air, and assign the total population score from SI Table 22.</p>	106.5																					
<p>5. NEAREST INDIVIDUAL: Assign a score of 50 if there are any Level I targets. Assign a score of 45 if there are Level II targets but no Level I targets. If no Actual Contamination Population exists, assign the Nearest Individual score from SI Table 22.</p>	7																					
<p>6. ACTUAL CONTAMINATION SENSITIVE ENVIRONMENTS: Sum the sensitive environment values (SI Table 13) and wetland acreage values (SI Table 23) for environments subject to exposure from the release of a hazardous substance to the air.</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th style="width: 50%;">Sensitive Environment Type</th><th style="width: 50%;">Value</th></tr> <tr><td> </td><td> </td></tr> <tr><td> </td><td> </td></tr> <tr><td> </td><td> </td></tr> <tr><td> </td><td> </td></tr> <tr> <th>Wetland Acreage</th><th>Value</th></tr> <tr><td> </td><td> </td></tr> <tr><td> </td><td> </td></tr> <tr><td> </td><td> </td></tr> </table>	Sensitive Environment Type	Value										Wetland Acreage	Value									
Sensitive Environment Type	Value																					
Wetland Acreage	Value																					
<p>7. POTENTIAL CONTAMINATION SENSITIVE ENVIRONMENTS: Use SI Table 24 to evaluate sensitive environments not subject to exposure from a release.</p>																						
<p>8. RESOURCES: Assign a score of 5 if one or more air resources applies within 1/2 mile of a source; assign a 0 if none applies</p> <ul style="list-style-type: none"> • Commercial agriculture • Commercial silviculture • Major or designated recreation area 																						
T = 113.5																						

SI TABLE 22 (From HRS TABLE 6-17): VALUES FOR POTENTIAL CONTAMINATION AIR TARGET POPULATIONS

Distance from Site	Pop.	Nearest Individual (choose highest)	Number of People within the Distance Category												Pop. Value
			1 to 10	11 to 30	31 to 100	101 to 300	301 to 1,000	1,001 to 3,000	3,001 to 10,000	10,001 to 30,000	30,001 to 100,000	100,001 to 300,000	300,001 to 1,000,000	1,000,000 to 3,000,000	
On a source	0	20	4	17	53	164	522	1,633	5,214	16,325	52,137	163,246	521,360	1,632,455	0
0 to $\frac{1}{4}$ mile	100	*	1	4	13	41	131	408	1,304	4,081	13,034	40,812	130,340	408,114	13
$\frac{1}{4}$ to $\frac{1}{2}$ mile	3505	2	0.2	0.9	3	9	28	88	282	882	2,815	8,815	28,153	88,153	282
$\frac{1}{2}$ to 1 mile	8265	1	0.06	0.3	0.9	3	8	26	83	261	834	2,612	8,342	26,119	83
> 1 to 2 miles	28150	0	0.02	0.09	0.3	0.8	3	8	27	83	266	833	2,659	8,326	83
> 2 to 3 miles	111305	0	0.009	0.04	0.1	0.4	1	4	12	38	120	375	1,199	3,755	375
> 3 to 4 miles	160095	0	0.005	0.02	0.07	0.2	0.7	2	7	28	73	229	730	2,285	229
Nearest Individual =		7	Sum =												1065

References GEMS

* Score = 20 if the Nearest Individual is within $\frac{1}{8}$ mile of a source; score = 7 if the Nearest Individual is between $\frac{1}{8}$ and $\frac{1}{4}$ mile of a source.

SI TABLE 23 (HRS TABLE 6-18): AIR PATHWAY VALUES FOR WETLAND AREA

Wetland Area	Assigned Value
< 1 acre	0
1 to 50 acres	25
> 50 to 100 acres	75
> 100 to 150 acres	125
> 150 to 200 acres	175
> 200 to 300 acres	250
> 300 to 400 acres	350
> 400 to 500 acres	450
> 500 acres	500

SI TABLE 24: DISTANCE WEIGHTS AND CALCULATIONS FOR AIR PATHWAY POTENTIAL CONTAMINATION SENSITIVE ENVIRONMENTS

Distance	Distance Weight	Sensitive Environment Type and Value (from SI Tables 13 and 20)	Product
On a Source	0.10	x	
		x	
0 to 1/4 mile	0.025	x	
		x	
		x	
1/4 to 1/2 mile	0.0054	x	
		x	
		x	
1/2 to 1 mile	0.0016	x	
		x	
		x	
1 to 2 miles	0.0005	x	
		x	
		x	
2 to 3 miles	0.00023	x	
		x	
		x	
3 to 4 miles	0.00014	x	
		x	
		x	
> 4 miles	0	x	
Total Environments Score =			

AIR PATHWAY (concluded)

WASTE CHARACTERISTICS

<p>9. If any Actual Contamination Targets exist for the air pathway, assign the calculated hazardous waste quantity score or a score of 100, whichever is greater; if there are no Actual Contamination Targets for the air pathway, assign the calculated HWQ score for sources available to air migration.</p>	10																						
<p>10. Assign the highest air toxicity/mobility value from SI Table 21.</p>	11																						
<p>11. Multiply the air pathway toxicity/mobility and hazardous waste quantity scores. Assign the Waste Characteristics score from the table below:</p> <table border="1" style="margin: 10px auto; border-collapse: collapse; font-size: 0.8em;"> <thead> <tr> <th style="text-align: left; padding: 2px;">Product</th> <th style="text-align: left; padding: 2px;">WC Score</th> </tr> </thead> <tbody> <tr><td>0</td><td>0</td></tr> <tr><td>>0 to <10</td><td>1</td></tr> <tr><td>10 to <100</td><td>2</td></tr> <tr><td>100 to <1,000</td><td>3</td></tr> <tr><td>1,000 to < 10,000</td><td>6</td></tr> <tr><td>10,000 to <1E + 05</td><td>10</td></tr> <tr><td>1E + 05 to <1E + 06</td><td>18</td></tr> <tr><td>1E + 06 to <1E + 07</td><td>32</td></tr> <tr><td>1E + 07 to <1E + 08</td><td>56</td></tr> <tr><td>1E + 08 or greater</td><td>100</td></tr> </tbody> </table>	Product	WC Score	0	0	>0 to <10	1	10 to <100	2	100 to <1,000	3	1,000 to < 10,000	6	10,000 to <1E + 05	10	1E + 05 to <1E + 06	18	1E + 06 to <1E + 07	32	1E + 07 to <1E + 08	56	1E + 08 or greater	100	<p style="font-size: 1.5em;">WC = 2</p>
Product	WC Score																						
0	0																						
>0 to <10	1																						
10 to <100	2																						
100 to <1,000	3																						
1,000 to < 10,000	6																						
10,000 to <1E + 05	10																						
1E + 05 to <1E + 06	18																						
1E + 06 to <1E + 07	32																						
1E + 07 to <1E + 08	56																						
1E + 08 or greater	100																						

AIR PATHWAY SCORE:

$$\frac{LE \times T \times WC}{82,500}$$

1.36

(maximum of 100)

SITE SCORE CALCULATION

	S	S ²
GROUND WATER PATHWAY SCORE (S _{GW})	52.89	2797
SURFACE WATER PATHWAY SCORE (S _{SW})	0.5	0.25
SOIL EXPOSURE (S _S)	0.006	0.000036
AIR PATHWAY SCORE (S _A)	1.36	1.85
<p>SITE SCORE $\sqrt{\frac{S_{GW}^2 + S_{SW}^2 + S_S^2 + S_A^2}{4}} =$</p>		26.4

COMMENTS